CLAIMS

1. Apparatus comprising:

a carrier plate;

a first plurality of camming elements, each of said camming elements including a downwardly directed camming surface;

a semi-kinematic mount connecting the first plurality of camming elements to a surface of the carrier plate;

a second plurality of camming elements, each of said camming elements including an upwardly directed camming surface slidably connected to a corresponding one of the downward directed camming surfaces; and

an actuator plate coupled to the second plurality of camming elements such that the upwardly directed camming surfaces move in relation to the downward directed camming surfaces in response to the actuator plate moving along a first axis, such that movement of the actuator plate along the first axis translates into movement of the carrier plate along a second axis orthogonal to said first axis.

2. The apparatus of claim 1, further comprising an actuator operative to move the actuator plate along the first axis.

3. The apparatus of claim 1, wherein the said semi-kinematic mount comprises a plurality of ball-in-cone mounts.

4. The apparatus of claim 1, further comprising:

a base; and

a semi-kinematic mount connecting the second plurality of camming elements to a surface of the base.

5. The apparatus of claim 4, wherein the actuator plate includes a plurality of apertures adapted to accommodate the second plurality of camming elements.

6. The apparatus of claim 1, wherein each of said downward directed camming surfaces is inclined at an angle of approximately 18.5 degrees from a plane of said surface of the carrier plate.

7. The apparatus of claim 1, wherein said first axis is one of said X- and Y-axes and said second axis is the Z-axis.

8. The apparatus of claim 1, wherein each of the actuator plate and the carrier plate include an optical aperture.

9. The apparatus of claim 1, further comprising a plurality of linear slides, each of said linear slides interconnected between adjacent downwardly directed camming surfaces and upwardly directed camming surfaces.

10. The apparatus of claim 4, wherein said second plurality of camming elements are slidably mounted to the base.

11. The apparatus of claim 10, further comprising a plurality of linear slides, each of said linear slides interconnected between one of said second plurality of camming elements and said surface of the base.

12. Apparatus comprising:

a carrier plate including a plurality of semi-hemispherical mounts attached to an underside of said carrier plate;

a first plurality of camming elements, each of said camming elements including a downwardly directed camming

surface and a cone-shaped receptacle connected to a corresponding one of said semi-hemispherical mounts;

a second plurality of camming elements, each of said camming elements including an upwardly directed camming surface slidably connected to a corresponding one of the downward directed camming surfaces; and

an actuator plate coupled to the second plurality of camming elements such that the upwardly directed camming surfaces move in relation to the downward directed camming surfaces in response to the actuator plate moving along a first axis, such that movement of the actuator plate along the first axis translates into movement of the carrier plate along a second axis orthogonal to said first axis.

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13. The apparatus of claim 12, further comprising an actuator operative to move the actuator plate along the first axis.

14. The apparatus of claim 12, further comprising:

a base; and

a semi-kinematic mount connecting the second plurality of camming elements to a surface of the base.

15. The apparatus of claim 14, wherein the actuator plate includes a plurality of apertures adapted to accommodate the second plurality of camming elements.

16. The apparatus of claim 12, wherein each of said downward directed camming surfaces are inclined at an angle of approximately 18.5 degrees from a plane of said surface of the carrier plate.

17. An orthogonal motion microscope stage including:

an X-axis frame operative to move along an X-axis;

a Y-axis frame operative to move along a Y-axis; and

a Z-axis frame operative to move along a Z-axis and including

a carrier plate,

a first plurality of camming elements, each of said camming elements including a downwardly directed camming surface,

a semi-kinematic mount connecting the first plurality of camming elements to an underside of the carrier plate,

a second plurality of camming elements, each of said camming elements including an upwardly directed

camming surface slidably connected to a corresponding one of the downward directed camming surfaces, and

an actuator plate coupled to the second plurality of camming elements such that the upwardly directed camming surfaces move in relation to the downward directed camming surfaces in response to the actuator plate moving along a first axis, such that movement of the actuator plate along the first axis translates into movement of the carrier plate along a second axis orthogonal to said first axis.

18. The stage of claim 17, further comprising a plurality of linear actuators, each of said linear actuators operative to move one of said X-axis, Y-axis, and Z-axis frames along a corresponding axis.